STARTER GUIDE

SIMPLEX AND 146.520: FREQUENCIES AND HOW TO CALL

Simplex means talking radio to radio on one frequency, with no repeater in between. It's how you reach a friend nearby, and it still works when a repeater goes down.

Printed from www.cqdeck.com/learn/simplex. The page always has the latest version.

THE SHORT VERSION

- Start on `146.520` MHz, the national 2 meter calling frequency, and move to another simplex frequency once you've made contact.
- Handheld to handheld, expect a mile or two among buildings and several miles over open ground. Height helps more than power.
- It keeps working when repeaters go down, which is why emergency plans count on it.

How it works

- You transmit and listen on the same frequency, so turn the offset and tone off.
- Height and antennas matter more than power. Handheld to handheld, expect a mile or two among buildings and several miles over open ground. Hilltops, rooftops and car antennas stretch that a lot.
- The same rules apply as on a repeater: give your call sign at the end of each contact and at least every 10 minutes.

Simplex or repeater?

Simplex and repeaters side by side

	SIMPLEX	REPEATER
The path	Straight from your radio to theirs	Up to a repeater on a hill or tower, then back down
Frequencies	One: you talk and listen on the same frequency	Two: the repeater listens on one and transmits on the other
Radio settings	Offset and tone off	The repeater's offset, and often a tone
Range from a handheld	A mile or two among buildings, several miles over open ground	As far as the repeater reaches, which can be 30 miles or more
In a power outage	Works as long as your radios have power	Works only if the repeater has backup power

The calling frequencies

Each band has a national calling frequency, where people listen for a call.

National FM simplex calling frequencies

BAND	FREQUENCY	NOTES
2 meters	146.520 MHz	The busiest. Every 2 meter radio covers it.
70 centimeters	446.000 MHz	Quieter, but worth saving.
1.25 meters	223.500 MHz	Needs a radio with the 222 MHz band.
6 meters	52.525 MHz	Needs a radio with the 6 meter band.

Calling frequencies are for making contact. Once you've reached someone, move to another simplex frequency so the channel stays open for others.

Other simplex frequencies

- In most of the US, 146.400 to 146.580 MHz and 147.420 to 147.570 MHz are set aside for 2 meter simplex. `146.550` is a popular choice.
- Band plans vary by region, and some areas use parts of those ranges for repeaters. Check your area's band plan or ask your club before you settle on a frequency.
- Never use a repeater's input or output frequency for simplex. You'd interfere with everyone on the repeater.
- Stay off 145.800 to 146.000 MHz. The band plan saves it for satellites.

How to make a call

1. Listen for a minute to make sure the frequency is quiet.
2. Say your call sign and where you're listening: "N0CALL, monitoring 146.520." Calling CQ is fine on simplex too.
3. Wait a minute or so, then try again. Simplex can be quiet, so be patient.
4. When someone answers, trade names and locations, then suggest moving off the calling frequency: "Let's move to 146.550."
5. On the new frequency, call the other station to confirm you both made it.

An example contact

YOU	N0CALL, monitoring 146.520.
W1DEMO	N0CALL, this is W1DEMO. You're a little scratchy but readable. I'm Pat, about six miles north of town.
YOU	W1DEMO, thanks, Pat. I'm Sam, on a handheld in my back yard. Want to move to 146.550 and free up the calling frequency?
W1DEMO	Sounds good. Meet you on 146.550. W1DEMO.
YOU	N0CALL, moving to 146.550.

Try reverse on a repeater

Many radios have a reverse setting that swaps a repeater's two frequencies, so you listen where the repeater listens.

- If you can hear the other station directly with reverse on, you're close enough to talk on simplex.
- Moving a long conversation to simplex frees the repeater for everyone else.

When the repeaters go down

- In storms and power outages, repeaters can fail. Simplex is what's left, and many emergency plans rely on it.
- Practice with a friend so you know your range before you need it. Try from home, from high ground and from your car.
- Some clubs hold simplex nights or contests. They're a fun way to find out how far your station reaches.

Sources

ARRL band plan https://www.arrl.org/band-plan

FCC rule 97.119: station identification https://www.ecfr.gov/current/title-47/chapter-I/subchapter-D/part-97/subpart-B/section-97.119